

#### **Features**

- RoHS compliant\* versions available (see How to Order "Termination" option)
- Compatible with automatic insertion equipment
- Superior package integrity
- Now available with improved tolerance to ±0.5 %

For information on specific applications, download Bourns' application notes:

- DRAM Applications
- Dual Terminator Resistor Networks
- R/2R Ladder Networks
- SCSI Applications

# 4100R Series - Thick Film Molded DIPs

#### **Product Characteristics**

Resistance Range ...... 10 ohms to 10 megohms Maximum Operating Voltage ......100 V Temperature Coefficient of Resistance 50  $\Omega$  to 2.2 M $\Omega$ .....±100 ppm/°C below 50 Ω .....±250 ppm/°C above 2.2 MΩ.....±250 ppm/°C TCR Tracking......50 ppm/°C maximum; equal values Resistor Tolerance..... See circuits Operating Temperature .....-55 °C to +125 °C Insulation Resistance ..... 10,000 megohms minimum Dielectric Withstanding Voltage .....200 VRMS Lead Solderability ..... Meet requirements

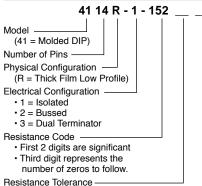
#### **Environmental Characteristics**

| =v.ii oiiii oiiii oiiii      |           |
|------------------------------|-----------|
| TESTS PER MIL-STD-202        | . ΔR MAX. |
| Short Time Overload          | ±0.25 %   |
| Load Life                    | ±1.00 %   |
| Moisture Resistance          | ±0.50 %   |
| Resistance to Soldering Heat |           |
|                              | ±0.25 %   |
| Terminal Strength            |           |
| Thermal Shock                | ±0.25 %   |
|                              |           |

of MIL-STD-202 Method 208

### **Physical Characteristics**

#### **How To Order**



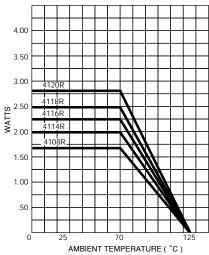
- Blank = ±2 % (see "Resistance Tolerance" on next page for resistance range)
- $F = \pm 1 \%$  (100 ohms 1 megohm)
- D = ±0.5 % (100 ohms 1 megohm)

#### Terminations

- LF = Tin-plated (RoHS compliant version)
- · Blank = Tin/Lead-plated

Consult factory for other available options

## Package Power Temp. Derating Curve

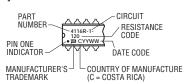


### Package Power Rating at 70 °C

| 4108R | 1.69 watts |
|-------|------------|
| 4114R | 2.00 watts |
| 4116R | 2.25 watts |
| 4118R | 2.50 watts |
| 4120R | 2.80 watts |

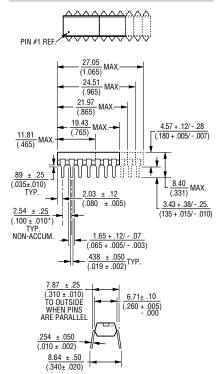
#### **Typical Part Marking**

Represents total content. Layout may vary.



For Standard Values Used in Capacitors, Inductors, and Resistors, click here.

#### **Product Dimensions**



Governing dimensions are in metric. Dimensions in parentheses are inches and are approximate.

\*Terminal centerline to centerline measurements made at point of emergence of the lead from the body.



#### **WARNING Cancer and Reproductive Harm**

www.P65Warnings.ca.gov

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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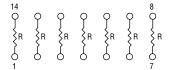
# 4100R Series - Thick Film Molded DIPs

#### **Isolated Resistors (1 Circuit)**

Model 4108R-1-RC (4 Isolated Resistors) Model 4114R-1-RC (7 Isolated Resistors) Model 4116R-1-RC (8 Isolated Resistors)

Model 4118R-1-RC (9 Isolated Resistors)

Model 4120R-1-RC (10 Isolated Resistors)



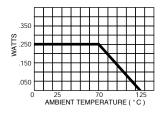
#### **Resistance Tolerance**

| 10 ohms to 49 ohms   | ±1 ohm |
|----------------------|--------|
| 50 ohms to 5 megohms | ±2 %*  |
| Above 5 megohms      | ±5 %   |

#### **Power Rating per Resistor**

At 70 °C ...... 0.250 watt

#### **Power Temperature Derating Curve**



Ohms

10 22

27

33

39

47

56

68

82

100

120

Code

100

220

270

330

390

470

560

680

820

101

121

Popular Resistance Values (1, 2 Circuits)\*\*

Code

181

221

271

331

391

471

561

681

821

102

122

Ohms

1.800

2,000

2.200

2,700

3,300

3,900

4 700

5,600

6,800

8,200

10,000

222

332

682

822

103

56.000

68,000

82,000

Ohms

180

220

270

330

390

470

560

680

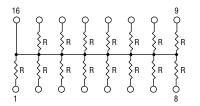
820

1,000

1,200

#### **Bussed Resistors (2 Circuit)**

Model 4108R-2-RC (7 Resistors, Pin 8 Common) Model 4114R-2-RC (13 Resistors, Pin 14 Common) Model 4116R-2-RC (15 Resistors, Pin 16 Common) Model 4118R-2-RC (17 Resistors, Pin 18 Common) Model 4120R-2-RC (19 Resistors, Pin 20 Common)



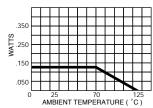
#### **Resistance Tolerance**

| 10 ohms to 49 ohms   | ±1 ohm |
|----------------------|--------|
| 50 ohms to 5 megohms | ±2 %*  |
| Above 5 megohms      |        |

#### **Power Rating per Resistor**

At 70 °C ...... 0.125 watt

#### **Power Temperature Derating Curve**



# AMBIENT TEMPERATURE (

#### Code Ohms Code Ohms Code 182 15.000 153 120.000 124 202 18,000 183 150,000 154 20,000 203 184 180,000 272 22,000 223 220,000 224 27,000 273 270,000 274 392 33,000 333 330,000 334 472 39 000 393 390 000 394 562 47,000 473 470,000 474

560.000

680,000

820,000

564

684

824

| 150        | 151        | 1,500       | 152         | 12,000      | 123          | 100,000    | 104        | 1,000,000               | 10    |
|------------|------------|-------------|-------------|-------------|--------------|------------|------------|-------------------------|-------|
| * Add "F"  | after resi | stance cod  | e for ±1 %  | tolerance   | available fi | rom 100 Ω  | through 1  | M Ω, or add '           | 'D"   |
| after re   | sistance c | ode for ±0. | 5 % tolera  | nce availal | ole from 10  | 0 Ω throug | h 1M Ω.    |                         |       |
| Part nu    | mber suffi | x example:  | s: -103 =   | 10K Ω, ±2   | %; -103F =   | = 10K Ω, ± | 1 %; -103E | $0 = 10K \Omega, \pm 1$ | 0.5 % |
| ** Non-sta | andard val | ues availal | ole, within | resistance  | range.       |            |            |                         |       |

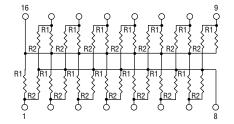
# **Dual Resistors (3 Circuit)**

Model 4108R-3-R1/R2 Model 4114R-3-R1/R2

Model 4116R-3-R1/R2 (shown)

Model 4118R-3-R1/R2

Model 4120R-3-R1/R2

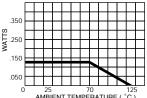


## **Resistance Tolerance**

| Below 100 ohms        | ±2 ohms |
|-----------------------|---------|
| 100 ohms to 5 megohms | ±2 %    |
| Above 5 megohms       | ±5 %    |

#### **Power Rating per Resistor**

At 70 °C ...... 0.125 watt **Power Temperature Derating Curve** 



Popular Resistance Values (3 Circuit)\*\*

| Resistance     |                |                |                |  |  |
|----------------|----------------|----------------|----------------|--|--|
| Oł             | ıms            | Code           |                |  |  |
| R <sub>1</sub> | R <sub>2</sub> | R <sub>1</sub> | R <sub>2</sub> |  |  |
| 160            | 240            | 161            | 241            |  |  |
| 180            | 390            | 181            | 391            |  |  |
| 220            | 270            | 221            | 271            |  |  |
| 220            | 330            | 221            | 331            |  |  |
| 330            | 390            | 331            | 391            |  |  |
| 330            | 470            | 331            | 471            |  |  |
| 3 000          | 6 200          | 302            | 622            |  |  |

563

683

823

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